IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REPLY BRIEF FOR THE APPELLANTS

Ex parte HONMA et al.

DIELECTRIC DEVICE HAVING DIELETRIC FILM TERMINATED BY HALOGEN ATOMS

Serial Number: 10/631,858
Filed: August 1, 2003
Appeal No.:
Group Art Unit: 2814
Examiner: Howard WEISS

In the event that there may be any fees due with respect to the filing of this paper, please charge Deposit Account No. 01-2300, **referencing docket number 024808-00014**.

Respectfully submitted,

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Date: July 7, 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Appellant: Kazunari HONMA et al.

Application No.: 10/631,858

Filed: August 1, 2003

Confirmation No.: 9152

Group Art Unit: 2814

Examiner: Howard WEISS

Attorney Dkt. No.: 024808-00014

For: DIELECTRIC DEVICE HAVING DIELECTRIC FILM TERMINATED BY HALOGEN ATOMS

REPLY BRIEF UNDER 37 C.F.R. §41.41(a)(1)

Date: July 7, 2006

I. INTRODUCTION

The Appellants have received an Examiner's Answer dated May 9, 2006, in the above-referenced appeal. Pursuant to 37 C.F.R. §41.41(a)(1) and MPEP §1208, Appellants respectfully submit this Reply Brief.

II. SUMMARY

This paper is submitted as part of an appeal from the rejections set forth in the final Office Action dated June 13, 2005, in the above-referenced application. The issues on appeal are whether:

(A) Claims 1-6 and 8 are unpatentable Nakamura in view of Fukaya;

(B) Claim 7 is unpatentable over Nakamura and Fukaya, as applied to Claim 1 above, and further in view of Furukawa;

(C) Claim 9 is unpatentable over Nakamura and Fukaya, as applied to Claim 1 above, and further in view Yamazaki; and

(D) Claim 10 is unpatentable over Nakamura, Fukaya, and Yamazaki, as applied to Claim 1 above, and further in view of Kerlin.

III. ISSUES IN REPLY BRIEF

A. 35 U.S.C. §103(a) Rejection of Claims 1-6 and 8

In the Examiner's Answer dated May 9, 2006, the Examiner maintains that Nakamura leaves the choice of methods of patterning up to one of ordinary skill in the art. The Examiner concedes that while one of the three methods listed by Nakamura (see column 4, lines 42-48 of Nakamura) would cover an upper surface of a lower electrode, forming the lower electrode independently, as the other two methods listed by Nakamura allow, can be accomplished by exposing the upper surface to the etchant. The Examiner cites Hwang as an example for removing a mask during etching of a platinum electrode layer (see column 6, lines 26-32 of Hwang) and Fukuya teaches removal of a photoresist layer (i.e., mask) before subsequent etching (see column 3, lines 42-48 of Fukuya).

As stated in the Brief on Appeal dated February 8, 2006, Appellants respectfully submit the assertion that Nakamura leaves the choice of methods of patterning up to one of ordinary skill in the art is, at best, partially correct.

To the extent Nakamura leaves selection of the etching process up to one of ordinary skill in the art as asserted by the Examiner, Appellants note Nakamura clearly and unambiguously states the process of etching is to be dry-etching. See column 3,

line 20, line 46, and line 55 of Nakamura. To the extent one of ordinary skill in the art is given a choice, Nakamura states the dry-etching should be performed using either fluorine gas or chlorine gas. See column 3, line 21, lines 22-25, line 47, and line 56 of Nakamura.

As explained in the Brief on Appeal dated February 8, 2006 and discussed in the Examiner's Answer, Nakamura clearly states the patterning of the first electrode (1) via etching is performed either simultaneously with the lower electrode (1), dielectric layer (2), and the upper electrode (3) stacked on top of each other, or independently on the lower electrode (1) alone. See column 4, lines 36-60 of Nakamura. However, from column 6, line 27 to column 11, line 30, Nakamura explains in detail as to why Rhenium (Re) should be used during the dry-etching process. As such, Appellants submit Nakamura does not leave the manner in which the electrode is etched up to one of ordinary skill in the art as asserted by the Office Action. Rather, Nakamura specifically provides the conditions under which the electrode is to be etched, that is, dry-etched, but does give the choice as to whether the dry-etching should be performed using either fluorine or chlorine gas.

In other words, the choice Nakamura provides with respect to the patterning method is whether the dry-etching is to be performed using fluorine or chlorine gas and not any etching method known to one of ordinary skill in the art as has been asserted by the Examiner throughout prosecution of the instant application. Moreover, Appellants note Nakamura fails to suggest the desirability of etching any other way besides dry-etching using fluorine or chlorine gas. Yet, the Examiner asserts that because Hwang and Fukuya teach other ways of etching, it would have been obvious to one or ordinary

skill in the art to do so. However, Appellants note that it is a well known axiom in U.S. Patent law that the mere fact that reference *can* be combined or modified do not render the resultant a combination obvious unless the prior art also suggests the desirability of the combination. See *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Furthermore, in view of the fact that Nakamura requires dry-etching but leaves the choice of fluorine or chlorine gas being used during the dry-etching to the reader, the Examiner has not yet provided an objective reason as to why one of ordinary skill in the art would have considered it obvious to ignore Nakamura's calling for dry-etching using either fluorine or chlorine gas and substitute such with the applied teachings of Hwang and Fukuya.

Appellants again note that Claim 1 recites a dielectric device comprising a first electrode layer having constituent elements located on its surface and terminated by halogen atoms, and a dielectric film formed on the surface of the first electrode layer that is terminated by said halogen atoms, wherein the first electrode layer contains at least one element selected from a group consisting of Pt, Ir, Pd and Ru and the halogen atoms are fluorine atoms.

Moreover, Appellants submit that throughout prosecution of the instant application, the Examiner continues to admit that Nakamura fails to teach or suggest a first or lower electrode that is terminated by fluorine atoms. Further, even though the first or lower electrode of Nakamura contains platinum Pt, Appellants respectfully submit that regardless of whether the first electrode is patterned simultaneously with other structural layers or by itself, platinum fluoride is not formed on the upper surface of the first electrode on which a dielectric layer is formed. Appellants respectfully submit that

Fukaya and Hwang, alone or in any combination, fail to teach or suggest an electrode containing at least one element selected from a group consisting of Pt, Ir, Pd and Ru that is terminated by fluorine.

Accordingly, Appellants respectfully submit that the art of record, i.e., Nakamura, Fukaya, and Hwang, alone or in any combination, fails to suggest the features recited by Claim 1. Therefore, Appellants respectfully submit that Nakamura, Fukaya and Hwang do not render the invention recited by Claim 1 unpatentable.

Thus, Claim 1 should be deemed allowable over the combination of Nakamura, Fukaya, and Hwang.

Claims 4-6 and 8 depend from Claim 1. Therefore, Appellants respectfully submit that Claims 4-6 and 8 should also be deemed allowable for at least the same reasons claim 1 should be deemed allowable, as well as for the additional features recited therein.

B. 35 U.S.C. §103(a) Rejection of Claim 7

In the Examiner's Answer dated May 9, 2006, the Examiner continued to take the position that Claim 7 is obvious in light of the combination of Nakamura and Fukuya, as applied to Claim 1 above, and further in view of Furukawa. Appellants respectfully reiterate that Furukawa fails to overcome the above-described deficiencies in the teachings, either written or illustrated, of Nakamura and Fukuya. As such, Appellants respectfully submit that the invention recited in Claim 7 of the above-identified application on appeal is not obvious in light of the alleged Nakamura/Fukuya and Furukawa combination.

C. 35 U.S.C. §103(a) Rejection of Claim 9

In the Examiner's Answer dated May 9, 2006, the Examiner continued to take the position that Claim 9 is obvious in light of the combination of Nakamura and Fukuya, as applied to Claim 1 above, and further in view of Yamazaki. Appellants respectfully reiterate that Yamazaki fails to overcome the above-described deficiencies in the teachings, either written or illustrated, of Nakamura and Fukuya. As such, Appellants respectfully submit that the invention recited in Claim 9 of the above-identified application on appeal is not obvious in light of the alleged Nakamura/Fukuya and Yamazaki combination.

D. 35 U.S.C. §103(a) Rejection of Claim 10

In the Examiner's Answer dated May 9, 2006, the Examiner continued to take the position that Claim 10 is obvious in light of the combination of Nakamura, Fukuya and Yamazaki, as applied to Claim 1 above, and further in view of Kerlin. Appellants respectfully reiterate that Kerlin fails to overcome the above-described deficiencies in the teachings, either written or illustrated, of Nakamura, Fukuya and Yamazaki. As such, Appellants respectfully submit that the invention recited in Claim 10 of the above-identified application on appeal is not obvious in light of the alleged Nakamura/Fukuya/Yamazaki and Kerlin combination.

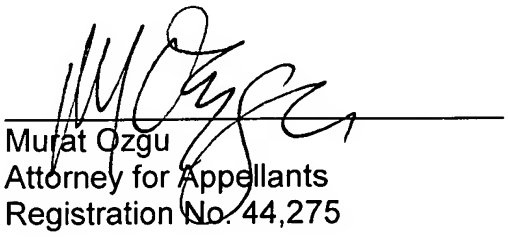
IV. CONCLUSION

In summary, therefore, and for all of the above-noted reasons, it is strongly contended that certain clear differences exist between the present invention as claimed in Claims 1 and 4-10 and the prior art relied upon by the Examiner. It is further contended that these differences are more than sufficient that the present invention would not have been obvious to a person having ordinary skill in the art at the time the invention was made.

In view of the above, it is respectfully requested that this Reply Brief be entered into this appeal, this Honorable Board of Patent Appeals and Interferences reverse the Examiner's decision in this case and indicate the allowability of application Claims 1 and 4-10.

In the event that this paper is not being timely filed, the Appellants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees which may be due with respect to this paper, may be charged to Counsel's Deposit Account No. 01-2300, **referencing docket number 024808-00014**.

Respectfully submitted,



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